

ABSTRACT OF THE DISCLOSURE

Bioconjugates, kits and assays for detecting the activity of protease enzymes such as β -secretase and caspase enzymes are described. The bioconjugates include a tether having a segment capable of recognizing and interacting with (e.g., being cleaved by) the enzyme, a fluorescer including a plurality of fluorescent species conjugated to a first location on the tether, and a quencher conjugated to a second location on the tether. The segment capable of recognizing and interacting with the protease enzyme (e.g., β -secretase or caspase) is located between the first and second locations on the tether. The plurality of fluorescent species are associated with one another such that the quencher is capable of amplified super-quenching of the fluorescer. The assay is suitable for screening potential drugs for their efficiency in inhibiting the activity of protease enzymes such as β -secretase in a high throughput format where the potential drugs are evaluated.